GR 14: Alternative classical theories of gravitation I

Time: Tuesday 17:30–18:10 Location: SPA SR220

GR 14.1 Tue 17:30 SPA SR220

On a Finsler-type modification of the Coulomb law — Yakov Itin[1], Claus Lämmerzahl[2], and •Volker Perlick[2] — [1]Institute of Mathematics, The Hebrew University of Jerusalem, Israel — [2]ZARM, Universitaet Bremen

We demonstrate that a Finslerian modification of the spacetime metric leads to modified Maxwell equations which are no longer differential equations but rather pseudo-differential equation. The corrections to the Coulomb potential and to the hydrogen energy levels are computed. We find that the Finsler modification of the metric yields a splitting of the energy levels. We calculate the bounds on the Finsler parameters from experimental data.

GR 14.2 Tue 17:50 SPA SR220

Parameterized post-Newtonian formalism for multimetric gravity — •Manuel Hohmann — Tartu University, Estonia

We discuss the post-Newtonian limit of multimetric gravity theories with $N \geq 2$ metric tensors and a corresponding number of standard model copies, and construct an extension of the parameterized post-Newtonian (PPN) formalism. This extended formalism allows a characterization of multimetric gravity theories by a set of constant parameters. The multimetric PPN parameters are in close correspondence to the standard PPN parameters, which have been measured using high-precision experiments in the solar system. We apply our formalism to a class of theories which we previously discussed in the context of cosmology and gravitational waves, and which feature an accelerating expansion of the universe. A comparison between our results and the measured PPN parameters shows that multimetric gravity is fully compatible with solar system observations.